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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/756,766 | 01/14/2004 | Richard John Trembecki | 117-490 | 1514 |
| 23117 | 7590 | 03/10/2006 | EXAMINER | |
| NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA- 22203 | | | YU, JAE UN | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2185 | |

DATE MAILED: 03/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/756,766

Applicant(s)

TREMBECKI, RICHARD JOHN

Examiner

Jae U. Yu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 June 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

The instant application having Application No. 10756766 has a total of 12 claims pending in the application, there are 1 independent claims and 11 dependent claims, all of which are ready for examination by the examiner.

Oath/Declaration

The applicant's oath/declaration has been reviewed by the examiner and is found to conform to the requirements prescribed in 37 C.F.R. 1.63.

Drawings

The applicant's drawings submitted on 6/8/2004 are acceptable for examination purposes.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1, 2, 3, 4, 6, 8 and 9 are rejected under 35 U.S.C. 103 (a) as being obvious over Zalewski et al. (US 2005/0010731 A1) in view of Fujimoto et al. (US 2002/0178336 A1).

2. As per independent claim 1, Zalewski et al. disclose, “a mirror volume manager [**“Processor” 140 & “Application Server” 105 of Figure 1, and “Local Storage Pool 1” of Figure 2]** for managing the storage of data on [**“Mirror” 115 & 120 of Figure 1, and “Synchronous Mirroring” & “Asynchronous Mirroring” of Figure 2]**; and the retrieval of data from [**“a process for retrieving a set of data”, Paragraph 24, Figure 6]**, a plurality of mirror facets [**“Local Storage Pool 2” 220 and “Remote Storage Pool” 235, Figure 2]** of at least one mirrored data storage volume [**“Local Target 1 & 2” 225 & 230 and “Remote Target 1” 240, Figure 2]**”.

“A first mirror facet local to the mirror volume manager [**“Local Storage Pool 2” 220, Figure 2]** and a second mirror facet remote from the mirror volume manager [**“Remote Storage Pool” 235, Figure 2]** and connected to the mirror volume manager [**“Local Storage Pool 1” 205, Figure 2]** by a communication link [**“Asynchronous Mirroring”, Figure 2]**”

“In response to a request to store data [**“Recognize Start of Data Activity (Data Update, Paragraph 23)” 5040, Figure 5]** the mirror volume manager performs a synchronous write [**“Synchronous Mirroring”, Figure 2]** of the data to be stored to the first mirror facet [**“Local Storage Pool 2” 220, Figure 2]** whereupon it reports completion of said request [**passing back control when synchronous update is completed, Paragraph 18]**, and an asynchronous write [**“Asynchronous Mirroring”,**

Figure 2] of the data to be stored to the second mirror facet [**“Remote Storage Pool”**
235, Figure 2]”

Zalewski et al. do not disclose expressly that the asynchronous write to the remote storage is “buffered if necessary”.

Fujimoto et al. disclose storing data to be transferred asynchronously to a remote place in an “internal buffer” (Paragraph 7).

Zalewski et al. and Fujimoto et al. are analogous art because they are from the same field of endeavor of data backup and recovery.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify Zalewski et al. by storing data to be transferred asynchronously to a remote place in an internal buffer as taught by Fujimoto et al. in paragraph 7.

The motivation for doing so would have been that “even if a large-scale natural disaster or the like has occurred in the place or the city where the master-side storage device is installed, insofar as the damage does not reach the remote-site storage device located in the remote place, the system as a whole is able to operate continuously simply by effecting a changeover to the remote-site system” as expressly taught by Fujimoto et al. in paragraph 6. Also, “since the remote copy to a remote place takes time in data transmission”, storing data in the internal buffer temporally guarantees

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faster response of reception complete message as expressly taught by Fujimoto et al. in paragraph 7.

Therefore, it would have been obvious to combine Fujimoto et al. and Zalewski et al. for the benefit of data reliability and faster response of reception to obtain the invention as specified in claim 1.

3. **Claim 2** discloses, "the data to be stored is always buffered". **Fujimoto et al. disclose storing data to be transferred asynchronously to a remote place in an "internal buffer" (Paragraph 7).**

4. **Claim 3** discloses, "a data storage buffer is provided local to said mirror volume manager [**"master-side storage device"**, paragraph 7 and 11, Fujimoto et al.] for buffering said data to be stored [**storing data in an internal buffer, Paragraph 7 of Fujimoto et al.**]. **Fujimoto et al. disclose, "the data buffer inside the master-side storage device" in paragraph 11.**

5. **Claim 4** discloses, "the data to be stored is stored in said storage buffer until completion of the asynchronous write". **Fujimoto et al. disclose that "uncopied data overflow from the data buffer" can be occurred if the transmission channel to the remote site is slow in paragraph 11**, which means that the "uncopied data" is stored in the data buffer until it is transmitted out to the remote site ("asynchronous write" from the claim, Paragraph 7).

6. **Claim 6** discloses, "said communications link uses an internet protocol".

Zalewski et al. disclose, "asynchronous mirrors may be deployed over large distances, commonly via TCP/IP" in paragraph 19.

7. **Claim 8** discloses, "at least one of said mirror facets comprises disk-based storage". **Zalewski et al. disclose that the second data storage medium may include a hard disk drive in paragraph 23, wherein the second data storage medium is included in the "Local Storage Pool 2" 220 ("mirror facets" from the claim) in Figure 2.**

8. **Claim 9** discloses, "at least one of said mirror facets comprises a plurality of data storage disks". **Zalewski et al. disclose that the second data storage medium may include a hard disk drive in paragraph 23, wherein the second data storage medium ("Local Target 1 & 2" 225 & 230 ("plurality of disks" from the claim), Figure 2) is included in the "Local Storage Pool 2" 220 ("mirror facets" from the claim) in Figure 2.**

9. **Claims 5 and 7** are rejected under 35 U.S.C. 103(a) as being unpatentable over Zalewski et al. (US 2005/0010731 A1) and Fujimoto et al. (US 2002/0178336 A1) as applied to claim 1 above, and further in view of Vange (US 2002/0002603 A1).

10. As per **claim 5**, Zalewski et al. and Fujimoto et al. disclose the system recited in claim 1.

Zalewski et al. and Fujimoto et al. do not disclose expressly, “said communications link has variable latency and bandwidth”.

Vange discloses that the Internet has “variable bandwidth” and its latency “varies wildly throughout the day” in paragraph 7.

Zalewski et al., Fujimoto et al. and Vange are analogous art because they are from the same field of endeavor of transferring data to a remote site.

At the time of the invention it would have been obvious for a person of ordinary skill in the art to modify Zalewski et al. and Fujimoto et al. by including the Internet as communications link, which has variable latency and bandwidth as taught by Vange in paragraph 7.

The motivation for doing so would have been the Internet’s “vast reach as a result of its wide and increasing availability and easy access protocols” as expressly taught by Vange in paragraph 7.

Therefore, it would have been obvious to combine Vange with Zalewski et al. and Fujimoto et al. for the benefit of wide availability and easy access to obtain the invention as specified in claim 5.

11. As per claim 7, Zalewski et al. and Fujimoto et al. disclose the system recited in claim 1.

Zalewski et al. and Fujimoto et al. do not disclose expressly, “said communications link is over the Internet”.

Vange discloses that the Internet has “variable bandwidth” and its latency “varies wildly throughout the day” in paragraph 7.

Zalewski et al., Fujimoto et al. and Vange are analogous art because they are from the same field of endeavor of transferring data to a remote site.

At the time of the invention it would have been obvious for a person of ordinary skill in the art to modify Zalewski et al. and Fujimoto et al. by including the Internet as communications link, which has variable latency and bandwidth as taught by Vange in paragraph 7.

The motivation for doing so would have been the Internet’s “vast reach as a result of its wide and increasing availability and easy access protocols” as expressly taught by Vange in paragraph 7.

Therefore, it would have been obvious to combine Vange with Zalewski et al. and Fujimoto et al. for the benefit of wide availability and easy access to obtain the invention as specified in claim 7.

12. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zalewski et al. (US 2005/0010731 A1) and Fujimoto et al. (US 2002/0178336 A1) as applied to claim 1 above, and further in view of Fallon et al. (US 2002/0069354 A1).

13. As per claim 10, Zalewski et al. and Fujimoto et al. disclose the system recited in claim 1.

Zalewski et al. and Fujimoto et al. do not disclose expressly, "at least one of said mirror facets comprises a RAID system".

Fallon et al. disclose "RAID" in paragraph 9.

Zalewski et al., Fujimoto et al. and Fallon et al. are analogous art because they are from the same field of endeavor of data storage and retrieval.

At the time of the invention it would have been obvious for a person of ordinary skill in the art to modify Zalewski et al. and Fujimoto et al. by including "RAID" system as taught by Fallon et al. in paragraph 9.

The motivation for doing so would have been "the benefit of increased data bandwidth for data storage and retrieval" as expressly taught by Fallon et al. in paragraph 10.

Therefore, it would have been obvious to combine Fallon et al. with Zalewski et al. and Fujimoto et al. for the benefit of high data bandwidth to obtain the invention as specified in claim 10.

14. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zalewski et al. (US 2005/0010731 A1) and Fujimoto et al. (US 2002/0178336 A1) as applied to claim 1 above, and further in view of McCabe et al. (US 2002/0016827 A1).

15. As per claim 11, Zalewski et al. and Fujimoto et al. disclose the system recited in claim 1.

Zalewski et al. and Fujimoto et al. do not disclose expressly, "more than one local mirror facet is provided".

McCabe et al. disclose, "multiple local mirroring units" in paragraph 69.

Zalewski et al., Fujimoto et al. and McCabe et al. are analogous art because they are from the same field of endeavor of data mirroring.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify Zalewski et al. and Fujimoto et al. by including "multiple local mirroring units" as taught by McCabe et al. in paragraph 69.

The motivation for doing so would have been to permit “mirroring across at least one journey link 206 to continue uninterrupted despite the unavailability of a given local mirroring unit 204” as expressly taught by McCabe et al. in paragraph 69 and in Figure 11.

Therefore, it would have been obvious to combine McCabe et al. with Zalewski et al. and Fujimoto et al. for the benefit of uninterrupted mirroring to obtain the invention as specified in claim 11.

16. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zalewski et al. (US 2005/0010731 A1) and Fujimoto et al. (US 2002/0178336 A1) as applied to claim 1 above, and further in view of Cordina et al. (US 2005/0071527 A1).

17. As per claim 12, Zalewski et al. and Fujimoto et al. disclose the system recited in claim 1.

Zalewski et al. and Fujimoto et al. do not disclose expressly, “more than one remote mirror facet is provided”.

Cordina et al. disclose “mirroring system with multiple remote storage systems” in paragraph 57 and in Figure 6.

Zalewski et al., Fujimoto et al. and Cordina et al. are analogous art because they are from the same field of endeavor of data mirroring.

At the time of the invention it would have been obvious for a person of ordinary skill in the art to modify Zalewski et al. and Fujimoto et al. by including multiple remote mirroring storages as taught by Cordina et al. in paragraph 57 and Figure 6.

The motivation for doing so would have been "to further guarantee remote mirroring of data" as expressly taught by Cordina et al. in paragraph 82.

Therefore, it would have been obvious to combine Cordina et al. with Zalewski et al. and Fujimoto et al. for the benefit of reliable remote mirroring to obtain the invention as specified in claim 12.

Relevant Art Cited by Examiner

The following prior art made of record and not relied upon is cited to establish the level of skill in the applicant's art and those art considered reasonably pertinent to applicant's disclosure. See MPEP 707.05(C).

The following reference teaches **asynchronous remote mirroring**.

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2005/0188254

Figures

1-5

Conclusion

A. Claims Rejected in the Application

Per the instant office action, claims 1-12 have received a first action on the merits and are subject of a first action non-final.

B. Directions of Future Correspondences

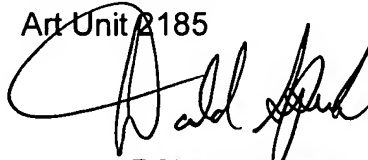
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jae U. Yu whose telephone number is 571-272-1133. The examiner can normally be reached on M-F 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald A. Sparks can be reached on 571-272-4201. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

February 23, 2006

Jae Un Yu
Patent Examiner
Art Unit 2185



DONALD SPARKS
SUPERVISORY PATENT EXAMINER